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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,712	12/11/2000	Taizou Itou	Q57601	2910

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EXAMINER

GAKH, YELENA G

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 06/03/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

ME-4

Office Action Summary

Application No.

09/732,712

Applicant(s)

ITOU ET AL.

Examiner

Yelena G. Gakh, Ph.D.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 11-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 13-16 is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☒ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-10, drawn to a method for measuring a water concentration, classified in class 436, subclass 39.
 - II. Claims 11-12, drawn to an infrared measuring apparatus, classified in class 422, subclass 82.05.
 - III. Claims 17-18, drawn to ammonia, classified in class 423, subclass 352.
 - IV. Claims 19-21, drawn to a semiconductor, classified in class 423, subclass 276.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used for analysis of any gas.

Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case ammonia having decreased water content can be obtained by the method, which does not comprise distilling crude ammonia.

Inventions II and III, IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions. Invention of Group II is an IR apparatus, which can be used for analytical purposes, and inventions of Group III and IV are ammonia and semiconductor, the production of which does not require using IR spectrometer.

Inventions III and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different

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functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions. Ammonia with decreased water content can be used for synthetic purposes, and a semiconductor nitride film and semiconductor can be produced using ammonia, which is obtained in a different way than through a distillation of crude ammonia.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Sheldon Landsman on 05/20/02 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-10, 13-16. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11, 12 and 17-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

2. Claims 13-21 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend on other multiple dependent claim (claims 3 and 13, 14 are multiple dependent claims). See MPEP § 608.01(n). Accordingly, the claims 13-16 have not been further treated on the merits.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 2, 4-10** are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (Anal. Chem.).

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Wu teaches quantitative analysis of trace moisture in NH_3 gas with dual-cell near-infrared diode laser absorption spectroscopy by measuring trace moisture from 110 to 1006 ppb (p. 3321, Conclusions), using reference gas with 110, 245, and 523 ppb of H_2O in p. 3320, "Calibration of H_2O in NH_3 "). Two H_2O absorption lines at 1923.162 and 1922.342 cm^{-1} were utilized, at which the absorption of NH_3 molecules was relatively small (p. 3316). A flow rate of the gas through the cells of ~ 1 m long (92 cm, p. 3317) is $\sim 300 \text{ cm}^3/\text{min}$ (0.3 L/min).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 3-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu.

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Wu does not particularly teach measurements conducted at the wave numbers listed in claims 3 and 4 and he does not disclose vaporizing liquefied ammonia to obtain ammonia. However, it would have been obvious for anyone of ordinary skill to find other IR ranges, than the one disclosed by Wu, where the water absorption signals would not overlap with ammonia absorption signals, and to vaporize liquefied ammonia to obtain ammonia gas, because ammonia is transported and stored in liquefied form.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Wu et al. (Jap. J. Appl. Physics)* teach absorption spectrometry of trace moisture in ammonia gas with a 1371 nm distributed-feedback diode laser. *Schröter et al. (US 4,023,193)* disclose a process and apparatus for replenishing developer in photoprinting machines, with developing medium being a mixture of ammonia gas and water vapor. The measurement of the concentration of the components is carried on by IR spectroscopy at 1,500 nm, 1,955 nm or 2,265 nm for ammonia and 1,360 or 1,869 nm for water.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (703) 306-5906. The examiner can normally be reached on 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

YG

May 30, 2002


Jill Warden
Supervisory Patent Examiner
Technology Center 1700